

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Petition of The Boeing Company for)	RM-11773
Allocation and Authorization of Additional)	
Spectrum for the Fixed-Satellite Service in the)	
50.4-51.4 GHz and 51.4-52.4 GHz Bands)	

**COMMENTS OF
THE GLOBAL VSAT FORUM**

Through these comments, the Global VSAT Forum¹ expresses the support of the international satellite community for the proposal to authorize additional uplink spectrum for the Fixed-Satellite Service (“FSS”) in the United States in the 50.4-51.4 GHz and 51.4-52.4 GHz bands.² The new uplink spectrum will help ensure that there is sufficient spectrum to support very high data-rate broadband service by V-band satellites.

As a leading voice of the international satellite community, GVF represents the satellite operators and service providers that make available critical services to people around the world. The value of satellite services as a ubiquitous, reliable link cannot be overstated. The Commission and the international community have recognized that deploying ubiquitous

¹With more than 250 members, GVF brings together organizations engaged in the delivery and use of advanced broadband and narrowband satellite services to consumers, and commercial and government enterprises worldwide.

² Petition of The Boeing Company for Allocation and Authorization of Additional Spectrum for the Fixed-Satellite Service in the 50.4-51.4 GHz and 51.4-52.4 GHz Bands, RM-11773, Public Notice Report No. 3051 (Sep. 16, 2016) (“*Petition*”).

broadband is a key infrastructure goal, and satellites are key to filling this need.³ In order to provide a technologically transparent complement and competitor to terrestrial broadband offerings, high speed satellite broadband will require sufficient spectrum to support uplink transmissions by individually-licensed gateway earth stations. The V-band is a critical growth band, much of which is already allocated for FSS use, and the 50.4-51.4 GHz and 51.4-52.4 GHz bands addressed in this Petition are a necessary and natural complement to the Commission's plan for next generation satellite broadband in the V-band.

I. SATELLITE BROADBAND IS CRITICAL TO THE FUTURE OF BROADBAND DEPLOYMENT

By its very nature, satellite service goes everywhere. This makes satellite the technology of choice for rapidly bringing connectivity to very large areas, and means satellite service is available where other services will not or cannot go, from remote areas to moving vehicles, ships and platforms at sea, and aircraft in flight. Because satellite service does not inherently rely on any terrestrial infrastructure, it also provides a critical lifeline following emergencies and natural disasters. In fact, the International Telecommunication Union, aid organizations, and communications companies maintain fleets of satellite-enabled vehicles to rapidly reestablish communication and connectivity after hurricanes, earthquakes, and tsunamis.

³ See Federal Communications Commission, Omnibus Broadband Initiative, Connecting America: The National Broadband Plan (2010) ("*National Broadband Plan*"), at 338 (available at http://hraunfoss.fcc.gov/edocs_public/attachmatch/DOC-296935A1.pdf); Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, as Amended by the Broadband Data Improvement Act , GN Docket No. 15-191, FCC 16-6 ¶ 48 (Jan. 28, 2016).

Recent announcements by several satellite service providers also highlight the growing role of satellite in providing a competitive alternative to terrestrial broadband service in areas where terrestrial service is less available.⁴ Using a combination of currently operational and recently announced satellites in the Ka-, Ku-, and V-bands to provide speeds at or above 25/3 Mbps, satellite operators will play a key role in the Commission's efforts to bring broadband quality and choice to all Americans.

The role of satellite is complementary to, but distinct from, terrestrial services and GVF urges the Commission to ensure that its millimeter wave ("mmW") policies account for the unique contribution of satellite to the United States broadband infrastructure. In particular, the Commission should ensure that the allocation of spectrum to the newly created Upper Microwave Flexible Use Service ("UMFUS") is not at the expense of critical existing and future satellite services.

II. V-BAND IS A CRITICAL FUTURE GROWTH BAND FOR SATELLITE BROADBAND

The V-band is a future growth band for satellite services, and must be made available for FSS to operate anywhere there are people who need connectivity. The satellite service community is continually developing new technologies to deliver higher performance to more people, using spectrum as efficiently as possible. Nonetheless, consumer demand for higher service speed and throughput is ever-increasing. Even with the extraordinary spectrum reuse capabilities of FSS, there is simply no substitute for allocating sufficient spectrum.

⁴ See Comments of the Satellite Industry Association, GN Docket No. 14-177 *et al.*, at 3 (Sep. 30, 2016) ("*SIA Further Notice Comments*").

A total of five gigahertz of V-band FSS downlink (space-to-Earth) spectrum already exists in the International Table of Frequency Allocations, consisting of the 37.5-42.5 GHz band. One half gigahertz of this range (42.0-42.5 GHz) does not include FSS in the United States Table of Frequency Allocations, however, partially out of concern for out-of-band emissions into the adjacent 42.5-43.5 GHz band, where sensitive radio astronomy operations exist.⁵ The satellite industry, however, continues to advocate for a downlink allocation for FSS in this spectrum.⁶

The Petition requests that the Commission provide access to a matching 5 GHz of uplink spectrum for FSS earth stations. The International Table of Frequency Allocations has already identified one configuration of spectrum to create 5 GHz of FSS uplink in the V-band, consisting of the 42.5-43.5 GHz, 47.2-50.2 GHz, and the 50.4-51.4 GHz bands, but the United States table omits the FSS allocation in the 42.5-43.5 GHz portion as a measure to protect radio astronomy in that band. Therefore, satellite broadband requires an alternative 1 GHz of FSS uplink spectrum. The 51.4-52.4 GHz band is a natural candidate, because it is immediately adjacent to the existing FSS uplink allocation at 50.4-51.4 GHz.⁷

⁵ See Allocation of Spectrum to Upgrade Fixed and Mobile Allocations in the 40.5-42.5 GHz Frequency Band *et al.*, IB Docket No. 97-95, FCC 10-186, ¶¶ 12-19 (2010).

⁶ As satellite operators explained in the Commission's Spectrum Frontiers proceeding, FSS satellite transmitters in V-band frequencies will have substantial capabilities to avoid interference with other spectrum users, including radio astronomy. Using beamforming, selective spot beams, and close coordination with the scientific community, GVF is confident that FSS operators can make operate on a non-interference basis in the 42.0-42.5 GHz band. This would enable more intensive use of this underused spectrum while ensuring protection for radio astronomy in the 42.5-43.5 GHz band.

⁷ As noted in Boeing's Petition, although the Commission's Table of Frequency Allocations at Section 2.106 does include an FSS Earth-to-space allocation in the 50.4-51.4 GHz band, the Commission should amend Section 25.202 of its rules to consistently reflect this FSS allocation by including the 50.4-51.4 GHz band as available for FSS Earth-to-space transmissions.

This proposal is consistent with the international consensus reflected in the ITU study process for the 51.4-52.4 GHz band. At the 2015 World Radiocommunication Conference (“WRC-15”), the delegates adopted Resolution 162, which initiated a series of studies of the 51.4-52.4 GHz band for FSS feeder link use.⁸ Resolution 162 recognizes the value of satellite systems “to deliver broadband services and enable universal broadband access,” along with the ability of satellite systems to promote spectrum efficiency through “technological developments such as advances in spot-beam technologies and frequency reuse.”⁹ Resolution 162 also noted the presence of existing allocations for fixed and mobile services, and radio astronomy, each of which will need to be protected.¹⁰ GVF members are participating in these studies, often through their respective Administrations, in order to craft an allocation that permits FSS uplink operations in these bands while striking the appropriate balance between satellite, fixed, and mobile allocations. Therefore, the adoption by the Commission of an FSS allocation in the 51.4-52.4 GHz band would be consistent with international efforts and would demonstrate leadership in global broadband deployment goals.

III. ANY PLAN FOR THE 50.4-51.4 GHZ AND 51.4-52.4 GHZ BANDS SHOULD PRESERVE FULL USE BY FSS

As explained above, GVF believe that exclusive use of the 50.4-51.4 GHz and 51.4-52.4 GHz bands by FSS will most strongly further the Commission’s mandate for nationwide broadband deployment and will best serve the public interest. GVF acknowledges, however, that the 50.4-52.4 GHz band addressed in the Petition is one of approximately ten bands already

⁸ Resolution 162 (WRC-15), Studies Relating to Spectrum Needs and Possible Allocation of the Frequency Band 51.4-52.4 GHz to the Fixed-Satellite Service (Earth-to-space).

⁹ *Id.*

¹⁰ *Id.*

adopted or currently under consideration by the Commission for use by UMFUS.¹¹ In contrast, the V-band is one of the few remaining growth bands that is relatively unencumbered by existing space or terrestrial radios systems and is feasible for use for broadband satellite service applications using existing technology.¹² Thus, GVF urges the Commission to preserve this essential growth band for FSS.

Should the Commission nonetheless proceed with authorizing UMFUS in the 50.4-52.4 GHz band, however, it must ensure that it does so under policies that do not constrain the growth of FSS. In particular, FSS operators will require the ability to place individually-licensed earth stations where they are needed, including in urban areas. Although these earth stations are expected to present only a small risk of interference to the vast majority of potential UMFUS users, the large number of individually-licensed earth stations needed to support very high data rate V-band FSS is not compatible with placement restrictions based on affecting no more than 0.1 percent of the population in any partial economic area (“PEA”) or county, or limiting the total number of earth stations in any PEA or county, as the Commission has considered for some mmW bands.¹³ GVF members concur that coexistence between FSS and UMFUS is possible without the use of such a rigid restriction, through the use of alternate spectrum sharing measures.

¹¹ Spectrum bands that have already been identified by the Commission for UMFUS include the 27.5-28.35 GHz (“28 GHz”), 37.5-38.6 GHz (“37 GHz”), and 38.6-40.0 GHz (“39 GHz”) bands, while the Commission is currently considering UMFUS identifications for the 24.25-24.45 GHz and 24.75-25.25 GHz band (“24 GHz band”), 31.8-33.4 GHz (“31 GHz”), 42.0-42.5 GHz (“42 GHz”), 47.2-50.2 GHz (“47 GHz”), 50.4-52.6 GHz (“50 GHz”), 71-76 GHz (“70 GHz”), and 81-86 GHz (“80 GHz”) bands.

¹² Comments of The Boeing Company, GN Docket No. 14-177, *et al.*, at 4-6 (Sep. 30, 2016).

¹³ *See, e.g.,* Use of Spectrum Bands Above 24 GHz For Mobile Radio Services, GN Docket No. 14-177, *et al., Report and Order and Further Notice of Proposed Rulemaking*, FCC 16-89, ¶ 412 (July 14, 2016) (proposing a one earth station per PEA limit for the 47 GHz band).

A first-in-time coordination approach would provide substantial useful spectrum and geographic area for deployment by UMFUS while ensuring FSS can place individually-licensed earth stations where and as needed. Under this approach, satellite operators would maintain and share with UMFUS a database of all individually-licensed earth station locations in the band. UMFUS operators and/or individual UMFUS devices and base stations would then be able to plan deployment or spectrum usage to avoid potential interference from nearby FSS earth stations.¹⁴

GVF also concurs with the satellite and wireless industry commenters that have suggested that this Petition be incorporated within the Commission's ongoing Spectrum Frontiers proceeding. As noted above, nationwide broadband deployment in the United States will require a combination of services, and the spectrum needs of these services should be considered together.

IV. CONCLUSION

The new FSS uplink spectrum proposed in the 50.4-51.4 GHz and 51.4-52.4 GHz bands will help ensure that there is sufficient spectrum to support very high data-rate V-band satellite broadband service. The V-band is a critical FSS growth band for which there is no substitute, and GVF recommends that it be preserved for FSS use exclusively. If the Commission does introduce UMFUS into these bands, it should do so on a first-in-time coordinated basis that preserves the freedom of satellite operators to locate individually-licensed FSS earth stations

¹⁴ *SIA Further Notice Comments* at 10-11.

where and as needed. In this way, FSS earth stations can be placed without geographic restriction and without substantially impacting potential terrestrial UMFUS deployment.

Respectfully submitted,

THE GLOBAL VSAT FORUM

By:

A handwritten signature in black ink, appearing to read 'David Hartshorn', written over a horizontal line.

David Hartshorn
Secretary General
Global VSAT Forum
Fountain Court
2 Victoria Sq, Victoria St
St Albans, Hertfordshire
United Kingdom, AL1 3TF
202-390-1885

Bruce A. Olcott
Preston N. Thomas
Jones Day
51 Louisiana Ave. NW
Washington, D.C. 20001
(202) 879-3630

Its Attorneys

October 17, 2016